Starting a Citizen Science Project:
things to think about before wading in

Linda Green

EPA Region II Citizen Science Workshop
September 11-12, 2014
San Juan, Puerto Rico

University of RI Watershed Watch
USDA-NIFA Extension Volunteer
Monitoring Network (EVMN)


Start With the End in Mind
Think about what you want to accomplish

Thanks to

Elizabeth Herron
Kris Stepenuck
Danielle Donkersloot
Bill Deutsch

Successful Programs Make A Difference

- Raise awareness
- Involve people in real science
- Create an informed constituency
- Promote individual actions &/or community responsibility
- Provide information on places (where no one else is looking)
- Identify & solve problems (locally)

Successful Citizen Science/Volunteer Monitoring Programs are. . .

- Well-organized
- Sound scientific basis
- Respectful of their volunteers
- Strong organizational support
- Report & use results
- Make a difference

Well Organized …

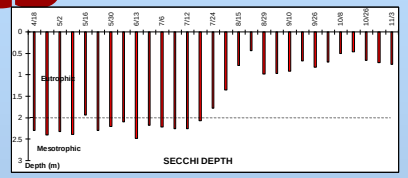
- Clear purpose
- Develop strong partnerships
  - communicate-coordinate-collaborate
- Good relations with decision-makers
- Strong leadership and coordination
- Clear staff, board, and volunteer roles

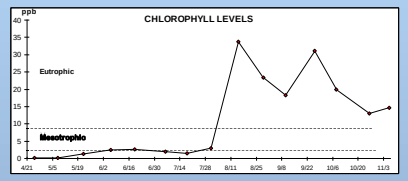
A Sound Scientific Basis means …

- Clear monitoring goals and questions
- Written study design
- Clear documentation of instructions for all monitoring activities
  - ✓Based on established methods!
- Monitoring scope and complexity appropriate to group's capabilities
- QA appropriate to data use

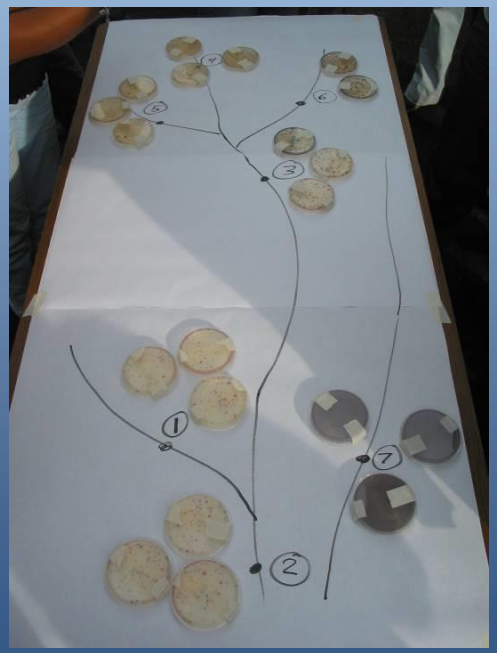
Successful Programs Report and Use Their Results

- Data are turned into a story
- Results and the story are reviewed by data users and resource people
- Results are reported in various ways tailored to the audience
- Information is turned into action
- Monitoring is used to assess progress in meeting goals





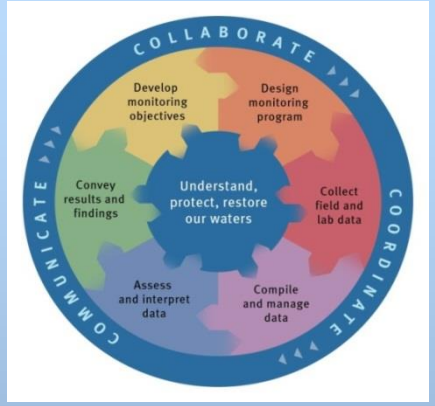
URI Watershed Watch



W. Deutsch – Global Water Watch


Start small,
start simple,
seek out help,
ask a lot of questions
go to workshops/conferences

Resources for Designing Programs



http://acwi.gov/monitoring/

www.usawaterquality.org/volunteer

http://www.birds.cornell.edu/citscitoolkit

http://water.epa.gov/type/rsl/monitoring/vm_index.cfm

Citizen Science/Volunteer Monitoring Listservs

- volmonlists@epa.gov
- extvolmonnet@lists.uwex.edu
- Exchanges archived at:

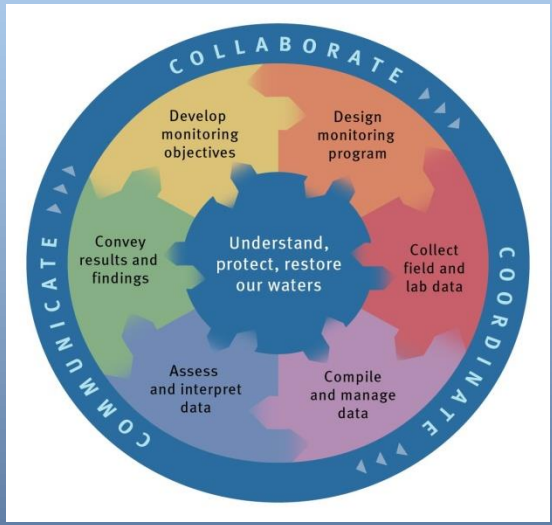
  http://www.usawaterquality.org/volunteer

100+ topics

- citsci-discussion-L-request@cornell.edu

Project Planning:
The Framework for Monitoring

- ***Assess the need***
- **Develop objectives**
- **Design your program**
- **Collect the data**
- **Compile and manage data**
- **Assess and interpret data**
- **Share results and findings**
- ***Evaluate your project***



National Water Quality Monitoring Council "A Framework for Monitoring"

Getting Started - Assess the Need: Compile Information

- About the resource
- About the goals/needs of your organization/community
- About current & past monitoring & research efforts
- About citizen science & volunteer monitoring

June 2003
Factsheet IV
(Updated Nov. 2010)

Designing Your Monitoring Strategy:
Basic Questions and Resources to Help Guide You

University of Rhode Island — University of Wisconsin

Elizabeth Herron, Kris Stepenuck, Linda Green and Kelly Addy

Getting Started in Volunteer Water Quality Monitoring?

This factsheet focuses on helping new program coordinators get their programs up and running. Our goal is to provide you with questions to consider, steps to follow, examples of what's worked and direct you to some of the many resources available to assist you in your monitoring efforts.

There are numerous potential monitoring program goals and monitoring activities available to meet those goals. It is essential to accurately identify what you want your volunteer monitoring to accomplish and how you want your data to be used before you consider specifically what and how you want to monitor. In fact, **the first step in determining WHAT to monitor is deciding WHY you want to monitor.**

Why Extension Volunteer Water Quality Monitoring Programs Got Started

Volunteer water quality monitoring encompasses a wide range of activities, meeting a diversity of needs. Replies to a recent inquiry of Extension-based volunteer monitoring programs provided a variety of reasons for starting a program. They included:

- To create a long term, credible, data set (address need for data), often due to a lack of watershed monitoring by state or other agencies;
- To educate the public about water quality issues;
- To develop and educate youth (school-based and other youth programs);
- To create consistency in methods, data management, and coordinated use of data between basins, volunteer groups, and agencies;
- To address public interest about why and how monitoring is done and what the results mean;
- To foster community involvement with water resources;
- To respond to a crisis in the shellfish industry caused by poor water quality conditions;
- To address concerns about drinking water quality in private wells.

The program design process discussed in this module includes several basic components:

1. defining the question(s) to answer (e.g. is the water safe for swimming?),
2. characterizing how the data will be used (e.g., education or regulatory compliance), and
3. identifying the resources available for accomplishing your goals.

This is the fourth in a series of factsheet modules which comprise the **Guide for Growing CSREES Volunteer Monitoring Programs,** part of the National Facilitation of Cooperative State Research Education Extension Service (CSREES) Volunteer Monitoring Efforts project. Funded through the USDA CSREES, the purpose of this four-year project is to build a comprehensive support system for Extension volunteer water quality monitoring efforts nationally. The goal is to expand and strengthen the capacity of existing Extension volunteer monitoring programs and support development of new groups. Please see http://www.usawaterquality.org/volunteer/ for more information.

Factsheet IV: Designing Your Monitoring Strategy


Why are you starting a citizen science or volunteer monitoring project?

Form a (Technical) Steering Committee

- Technical expertise
- Sounding board
- Experience
- Connections
- Agency buy-in

Project/Program/Study Design

What, When, Who and How, Why

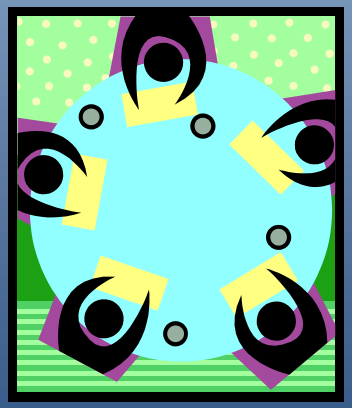
It describes the rationale for, and specific approaches of your monitoring efforts.

- ✓**Should flow out of the vision, goals and objectives**
- ✓**Should objectively reflect resources**
- ✓**Good design is critical for success!**

Assess What is Possible

Consider

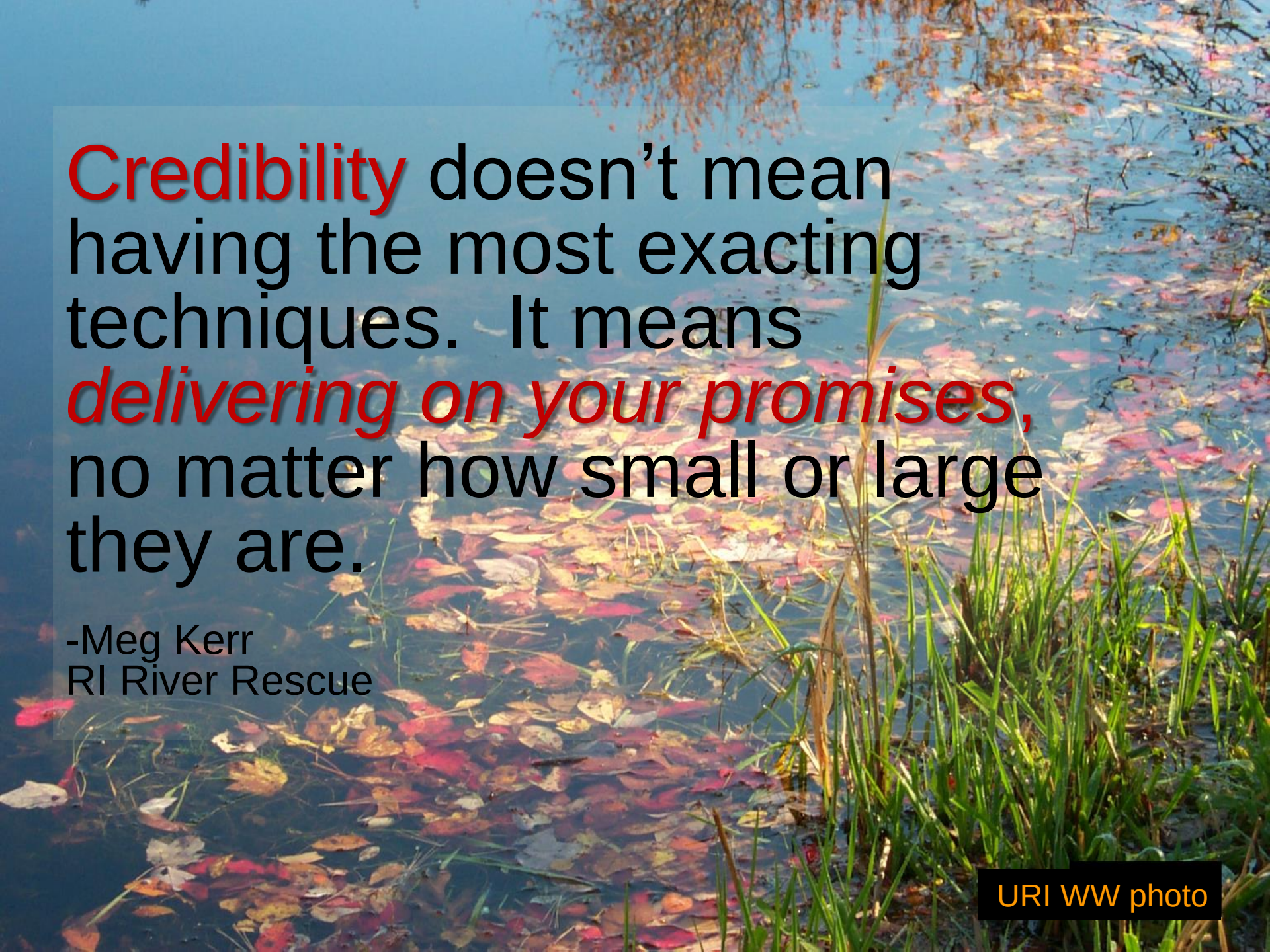
- **Skills and knowledge**
- **Potential data uses and users**
- **Level of commitment**
- **Financial resources**



Useful Sources to Locate Methods

- **EPA Guidance Manuals**
- **www.usawaterquality.org/volunteer**
- ***The Volunteer Monitor* newsletter archives at EPA**
- **Other programs - Listservs**
- **Conferences - workshops**
- **Test kit catalogs**
- ***Standard Methods for the Examination of Water and Wastewater***

Ask how others are doing it

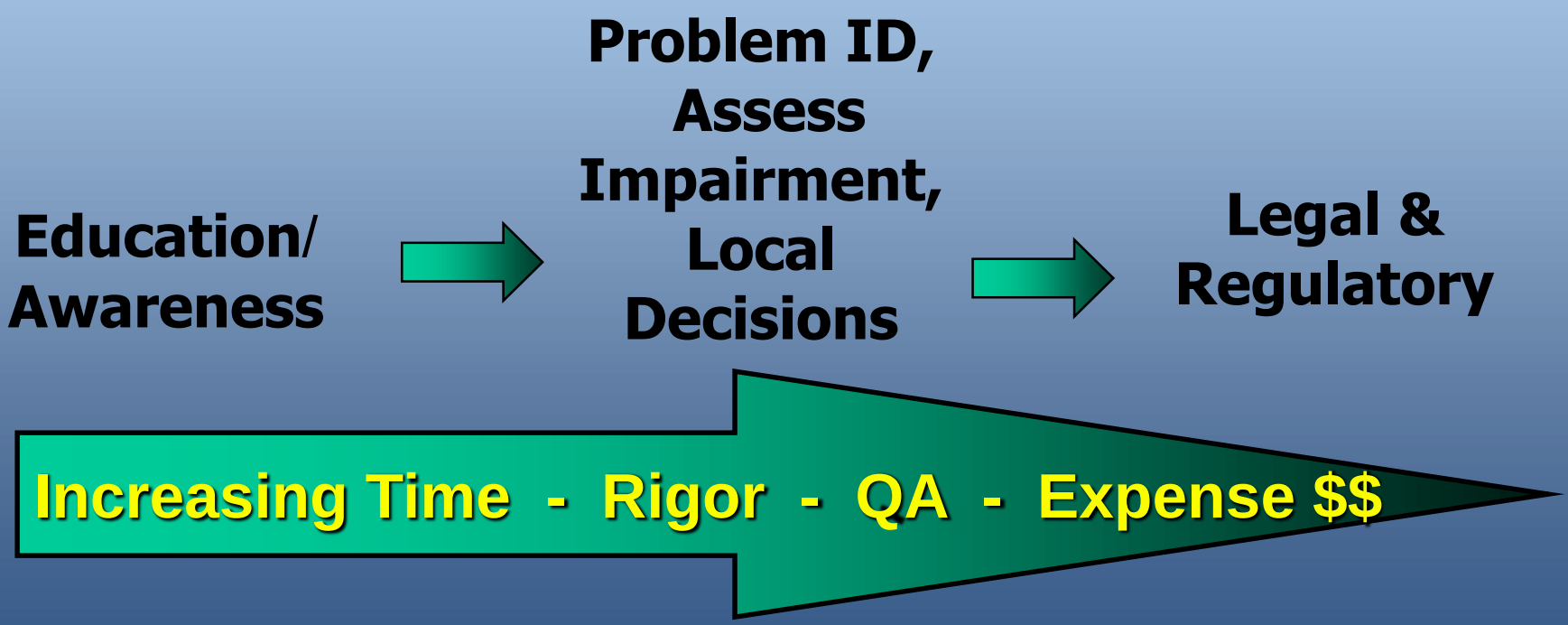

Credibility doesn't mean having the most exacting techniques. It means *delivering on your promises*, no matter how small or large they are.
-Meg Kerr
RI River Rescue
URI WW photo

Quality is assured through:

- Training
- Repetition
- Routine sampling
- Adhering to established procedures
- Monitoring multiple indicators
- QA/QC field and laboratory testing

It is easy to collect bad data and very hard to make bad data good!

The Continuum of Volunteer Monitoring Programs



Applying knowledge to improve water quality
Volunteer Water Quality Monitoring
National Facilitation Project
A Partnership of USDA NIFA & Land Grant Colleges and Universities

Originated by G. Dates, River Network
Modified by L. Green

Education/ Awareness → **Problem ID, Assess Impairment, Local Decisions** → **Legal & Regulatory**

Increasing Time - Rigor - QA - Expense $$

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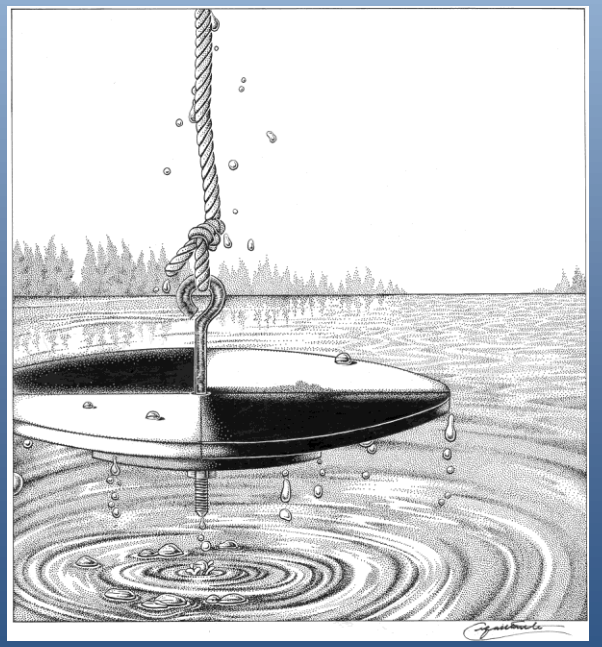
Most Widely Used Monitoring Tools?



The Tiered Approach

Allows for volunteers to choose level of monitoring involvement based on:

- ✓**Intended purpose for monitoring**
- ✓**Intended data use**
- ✓**Intended data users**

Wisconsin's Tiered Program Options for Involvement

Level 1: Introductory

Data used educationally and locally

Level 2: Status and Trends

Data used for management decisions

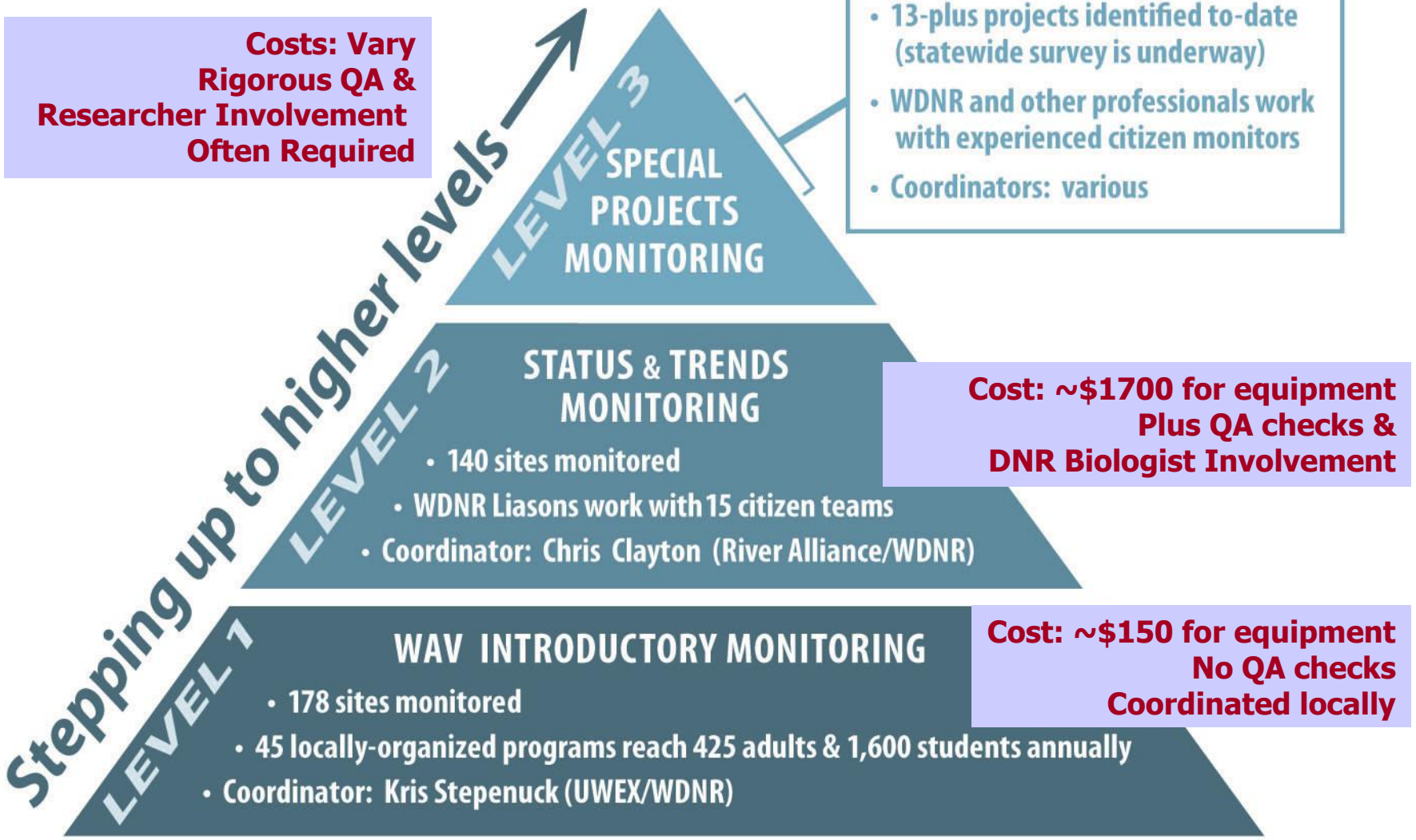
Trust building between citizens & biologists

Level 3: Special Projects

Data from trusted and trained citizens used for research projects (e.g., university-related, TMDL monitoring, BMP evaluation)

Water Action Volunteers

Costs: Vary
Rigorous QA &
Researcher Involvement
Often Required



For more information, visit:

http://watermonitoring.uwex.edu

Program Management Considerations

- **All volunteer, paid staff or combo**
  - **Dedicated staff is critical to success**
- **Home organization**
  - ✓**School-University-College**
  - ✓**Agency**
  - ✓**Church**
  - ✓**Environmental or Sporting Organization**
  - ✓**Community group**

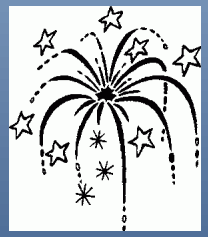

Create clear job descriptions
For program staff
For volunteers

Recruiting Volunteers

- Social media, TV, radio
- Word of mouth – local leaders

- Articles in newspapers/newsletters

- Community organizations
- Churches
- Schools/Youth groups

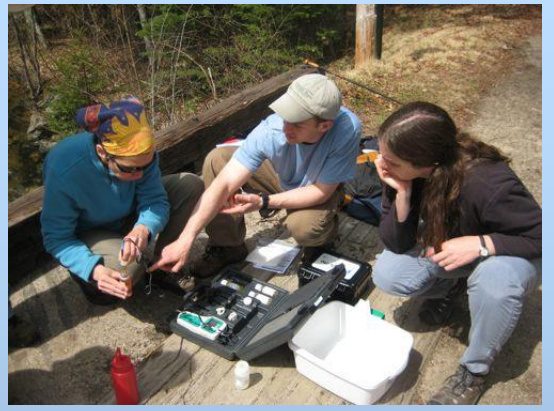


- Nearby residents
- Sporting/environ. orgs.

- Fairs, festivals, comm. events

Make training a process that flows throughout your program, it is …

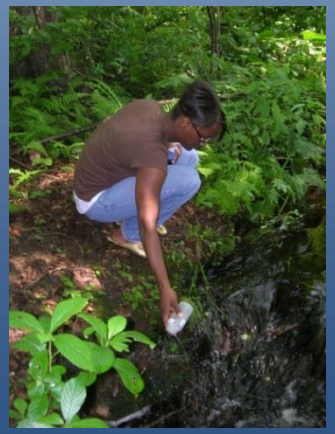
Salt Ponds Coalition photo

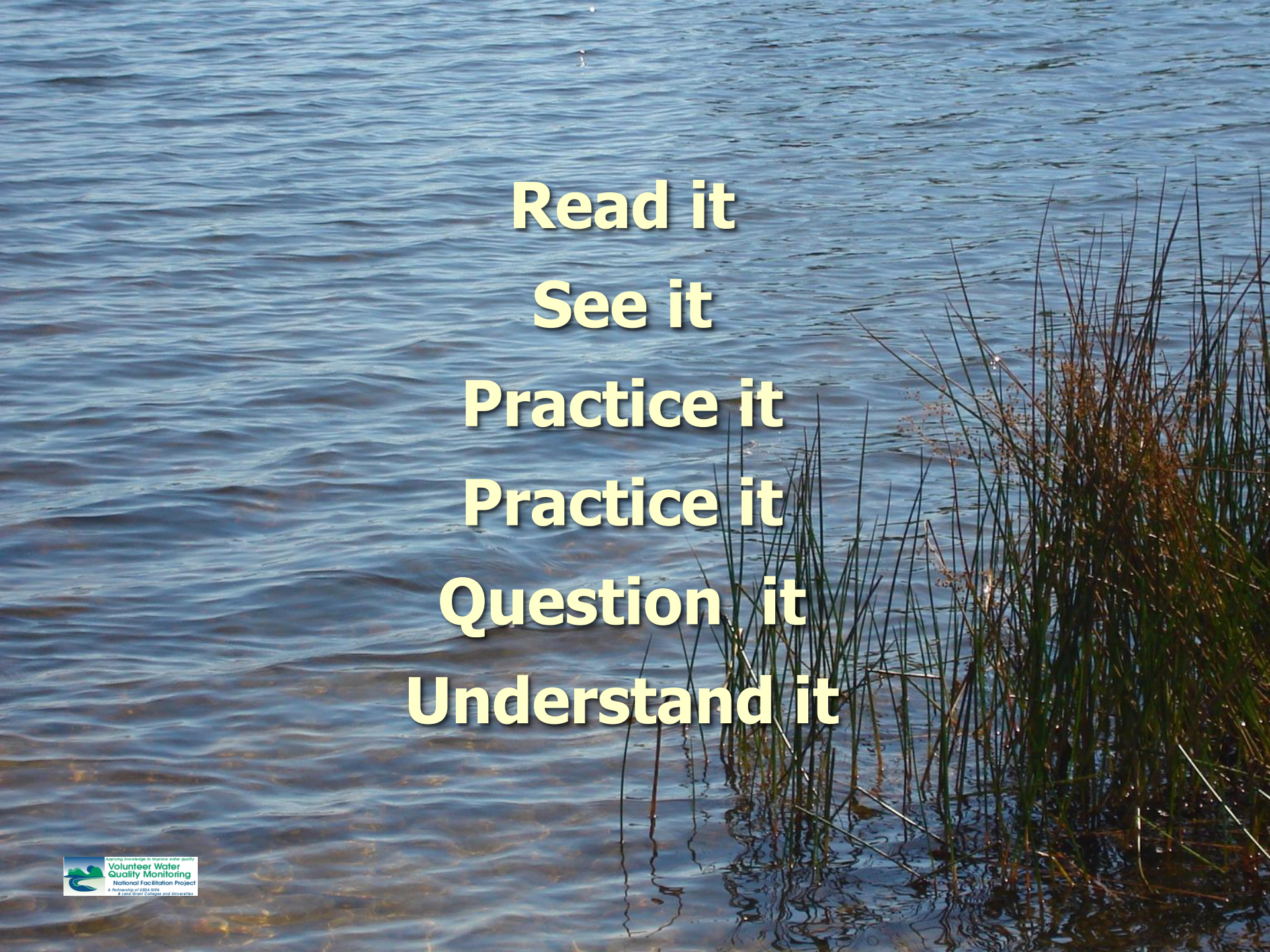


… essential for volunteer success

&

… essential for program success





Applying knowledge to improve water quality
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A Few Training Tips

- Keep class size small
- Provide food and beverages
- Provide plenty of networking time
- Utilizing experts and field experiences stimulates interest
- Repeat, repeat, repeat (& repeat again)

Program Support-Nationwide

- **EPA (http://www.epa.gov/owow/)**
  - **What Volunteer Monitoring Is**
  - **Volunteer Monitoring Methods**
  - **National Directory of Volunteer Monitoring Programs**
  - ***Volunteer Monitor* Newsletter**
    - **archives**
    - **Electronic thru NWQMC**
  - **QAPP Guidance**
- **NWQMC biennial conferences**
- **USGS, NOAA**

Program Support-Nationwide

USDA-NIFA Extension Volunteer Monitoring Network

www.usawaterquality.org/volunteer

- Guide for Growing Programs
- Current research with / about volunteers
- Programs contact information

Applying knowledge to improve water quality

Volunteer Water Quality Monitoring

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Home of the Extension Volunteer Monitoring Network

Volunteer Monitoring National Water Resource Project

- Project Description (382 K pdf file)
- Nationwide Inquiry Results NEW!
- Outreach Materials and Activities
- Online Databases
- Training Modules

Extension Volunteer Monitoring Network Programs

- National Volunteer Water Monitoring Program Directory NEW!
- Extension-connected Programs
- Master Naturalist Programs
- Job postings

Researching and Validating Volunteer Monitoring

- Validation Studies
- Other Volunteer Monitoring Research

Related Research and Educational Efforts

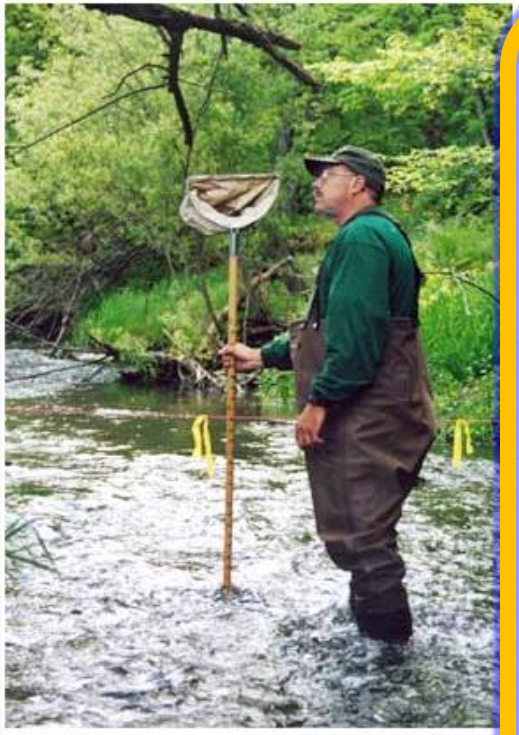
- Select Archives of Volunteer Monitoring Listserv Discussions
- Publications

Tribal Initiatives

- Great Lakes Survey
- Great Lakes Tribal Water Summit

Other National Water Resource Projects ↣

- NEMO
- Other Water Resource Projects



Upcoming Events ↣

ANROSP Conference
Nov. 4-7, 2013
Ocean Springs, MS

Maryland Water Monitoring Conference
December 5, 2013
Linthicum Heights, MD

National Monitoring Conference
April 28-May 2, 2014
Cincinnati, OH

Guide for Growing Programs

- Getting Started (234 K pdf)
- Why Monitoring Makes Sense (582 K pdf)
- Designing Your Monitoring Strategy (1.6 M pdf)
- Monitoring Matrix (80 K pdf)
- Effective Training (856 K pdf)
- Monitoring Equipment Suppliers (437 KB pdf)
- Direct Links to Monitoring Programs' Manuals (online)
- Building Credibility (942 K pdf)
- Sharing Information Through Internet Exchanges (127 K pdf)
- Volunter Management (1 M pdf)
- Planning Your Program's Data Management System (560 K pdf)
- Tips and Tools for Effective Presentations (541 K pdf)
- Outreach Tools (464 K pdf)
- Fundraising (590 K pdf)
- Bacteria Monitoring Intro (468 K pdf)
- Methods for Monitoring Bacteria in Surface Waters (916 K pdf)
- Presenting Bacteria Monitoring Data Effectively (522 K pdf)
- Evaluating Your Volunteer Monitoring Program (404 KB pdf)

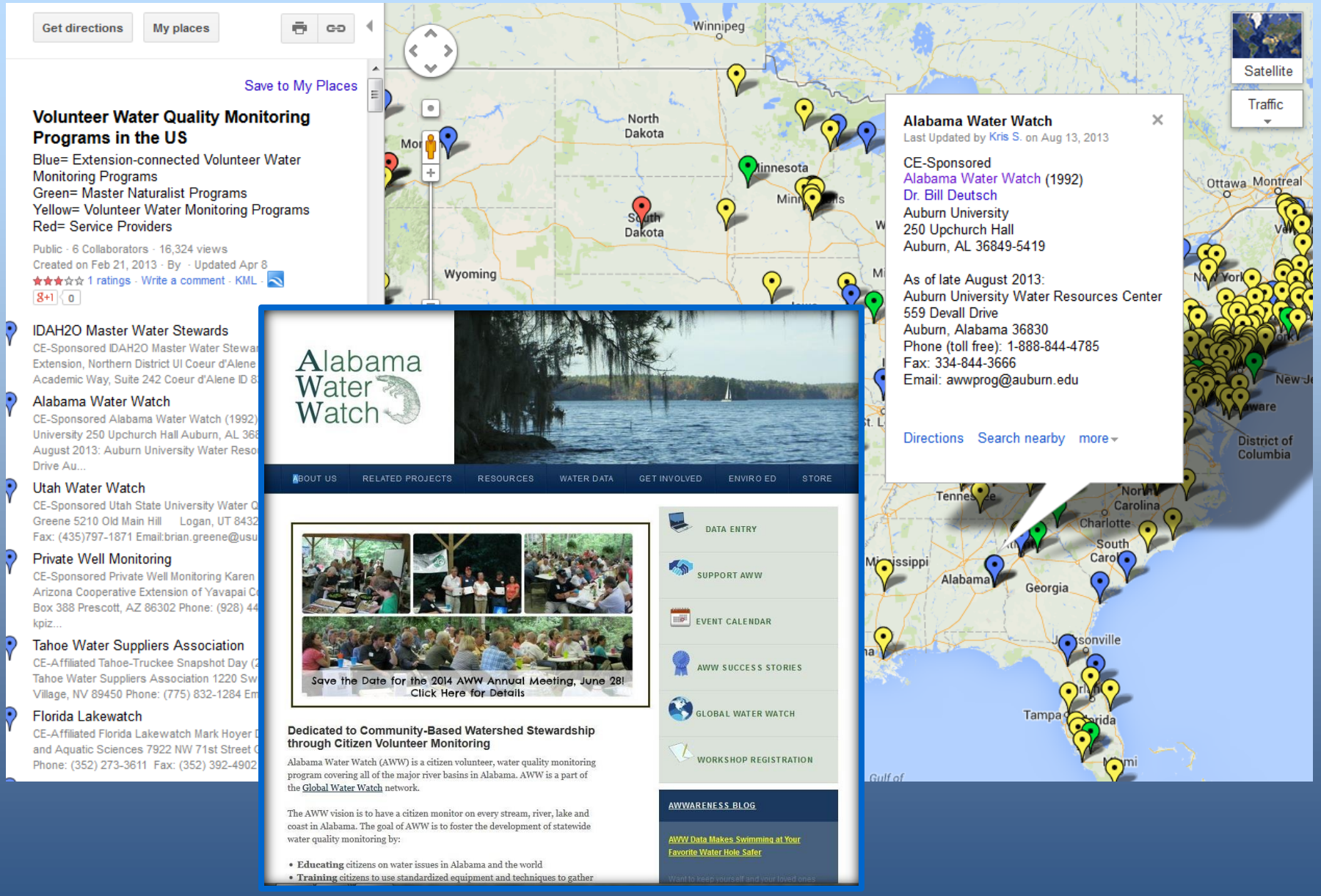
Of Special Interest

- Nationwide Inquiry Results NEW!
- National Volunteer Water Monitoring Program Directory NEW!
- Secchi Dip-In
- Volunteer *E. Coli* Monitoring Project
- *Volunteer Monitor* Newsletter
- World Water Monitoring

Extension, Master Naturalist, VM Parent and Service Provider Programs

http://www.usawaterquality.org/volunteer/VolunteerMonPrograms/index.html

Kris Stepenuck



http://www.usawaterquality.org/volunteer/VolunteerMonPrograms/index.html

Volunteer Monitoring: Cost Effective – Not Cost Free

- Staff (incredibly hard-working, underpaid)
- Field and lab equipment and supplies
- Laboratory space or analytical services
- Communication- web, cell, mail
- Office expenses, publications
- Conferences / workshops
- Transportation (personnel or samples)
- Insurance
- Special events / volunteer recognition

Consider Charging for Services

- Greater value often placed on things with a cost
- Supports the program
- Provides stability – which can attract additional funds
- Can be used for match
- Can enhance perception of credibility

Summary

Start by addressing the tough questions

Determine objectives

Develop a written plan

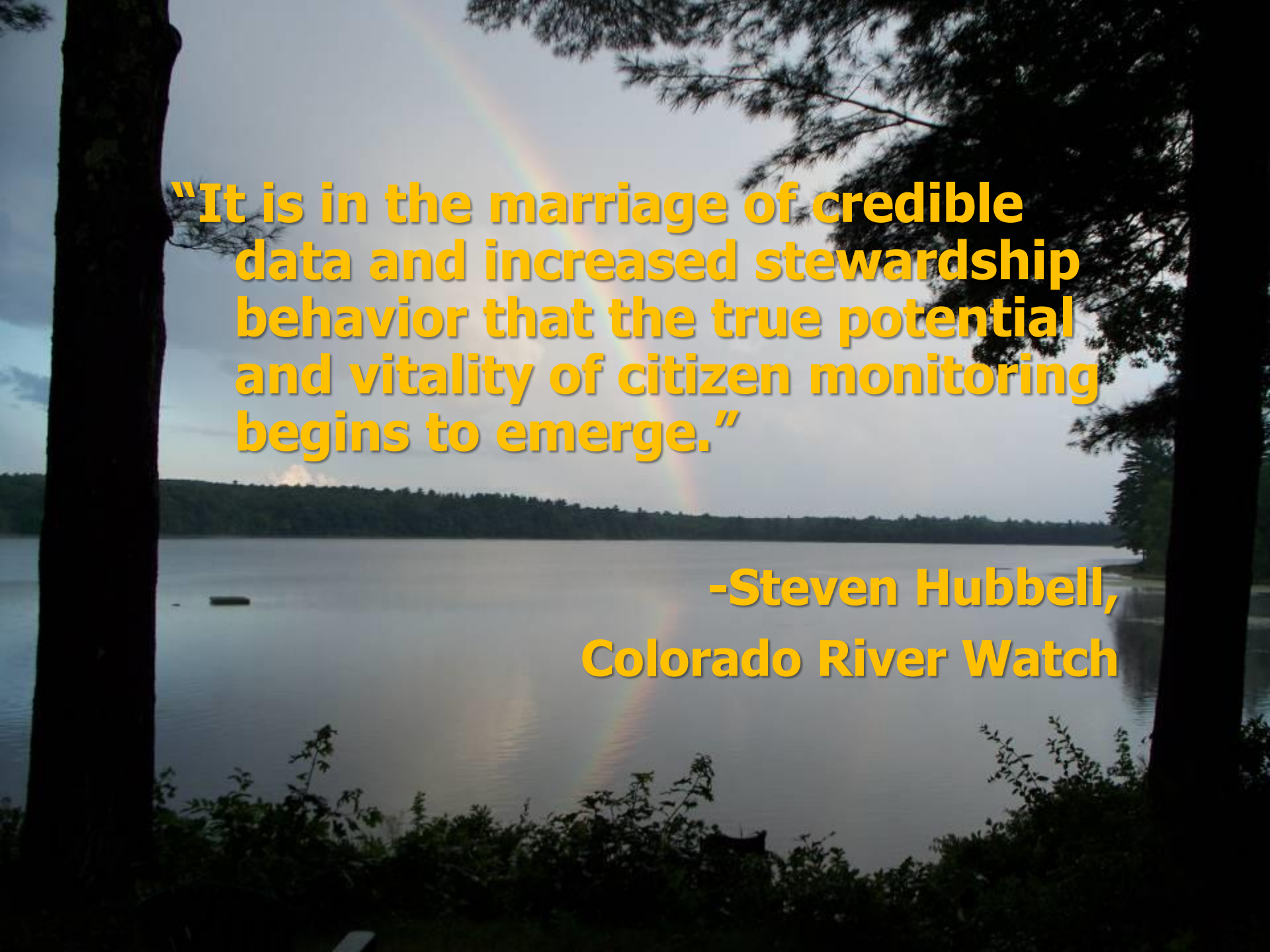
Communicate – coordinate - collaborate

Use varied learning techniques

Seek varied sources of funding

Use all available resources

Applaud your volunteers (and yourself) !


"It is in the marriage of credible data and increased stewardship behavior that the true potential and vitality of citizen monitoring begins to emerge."
-Steven Hubbell,
Colorado River Watch